

POST TONSILLECTOMY NAUSEA AND VOMITING: ROLE OF SINGLE INTRAVENOUS DOSE OF DEXAMETHASONE

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ABSTRACT

Background: Tonsillectomy is the commonest ENT surgical procedure. The common postoperative morbidities associated with tonsillectomy are nausea, vomiting, pain and bleeding. The objective of this study was to compare the effects of single intra-operative intravenous dose of dexamethasone versus control group on frequency of post tonsillectomy nausea and vomiting and need for rescue anti-emetics in the first 24 hours.

Material & Methods: This comparative study was conducted at Department of ENT, DHQ Hospital, Lakki Marwat from January 2009 to June 2010. Patients of both gender aged 6-30 years were listed for elective tonsillectomy or adenotonsillectomy. Patients with history of acute tonsillitis within six weeks, bleeding diathesis, or those with a known contraindication to steroids, were excluded. Patients were divided into group 1 (treatment) and 2 (control) of 50 each on alternate basis. A single dose of dexamethasone was given to patients of group 1 intra-operatively, whereas patients in group 2 received nothing. The difference in frequency of postoperative nausea, vomiting and need for rescue anti-emetics between the two groups was analyzed by Chi-Square test.

Results: Out of 100 patients, 66 were male and 34 female. Statistically significant decrease in frequency of nausea, vomiting and need for rescue anti-emetics (p -values 0.006, 0.014 and 0.008 respectively) was noted in patients treated with dexamethasone.

Conclusion: Single dose of dexamethasone given intra-operatively reduces the frequency of post-operative nausea, vomiting and the need for rescue anti-emetics in the first 24 hours.

KEY WORDS: Tonsillectomy, Post-operative nausea and vomiting, Dexamethasone.

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INTRODUCTION

In the United States, more than 530,000 tonsillectomies are performed annually in children younger than 15 years with current rates of 0.53 and 1.46 per thousand children for tonsillectomy and adeno-tonsillectomy respectively.^{1,2} Nausea, vomiting and poor oral intake are the commoner morbidities following tonsillectomy. Postoperative nausea and vomiting (PONV) apart from causing dehydration and delayed discharge from hospital can result in tension on suture lines, venous hypertension, haemorrhage and pulmonary aspiration.³ Vomiting accounts for 30% re-admissions after day-case tonsillectomies.⁴ Apart from the effects of general

anaesthesia, one of the commonest reason for PONV in post-tonsillectomy patients is the swallowed blood which causes gastrointestinal irritation and thus increases the likelihood of postoperative nausea and vomiting.⁵ The frequency of post-tonsillectomy emesis is more frequent in pediatric patients than in adults.⁶ Dexamethasone has been reported to have prophylactic effect on PONV in patients undergoing tonsillectomy.⁷ The objective of the present study was to compare the effects of single intra-operative intravenous dose of dexamethasone versus control group on frequency of post operative nausea and vomiting and the need for rescue antiemetics in the first 24 hours in patients undergoing tonsillectomy/ adenotonsillectomy.

MATERIAL AND METHODS

This comparative study was conducted at Department of ENT, Head and Neck Surgery, District Headquarter Hospital, Lakki Marwat from January

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2009 to June 2010. Patients of both gender aged 6-30 years were listed for elective tonsillectomy or adenotonsillectomy. Patients with history of acute tonsillitis within six weeks, bleeding diathesis, those who received anti-emetics or steroids 24 hours pre-operatively, or with a known contraindication to steroids, were excluded. All patients were admitted on the morning of the scheduled operation day. Complete blood count, hemoglobin level, bleeding time, clotting time, HBsAg and Anti HCV were done in all the patients preoperatively. A written informed consent containing terms about inclusion in study and benefits and risks involved, was obtained from each patient. Patients were divided into group 1 (treatment) and group 2 (Control) of 50 each on alternate basis. Patients in group 1 received dexamethasone 0.5mg/kg diluted in 5 ml normal saline while patients in group 2 received nothing.

The anaesthetic protocol was standardized in all the patients. After giving calculated doses of propofol and atracurium, endotracheal intubation was done. Anaesthesia was maintained with isoflurane, oxygen and nitrous oxide. The calculated dose (0.5mg/kg) of dexamethasone was administered after the induction of anaesthesia in group 1 (treatment) patients. Each patient received 20-30 ml/kg Ringers lactate solution during the intraoperative period. Tonsillectomy was performed by sharp dissection snare technique in all the patients by the same surgeon (MIK). Any bleeding that occurred after pressure had been applied with gauze was controlled by suture ligation (Silk 1 or Catgut 2-0). No electrocautery was used for haemostasis. When indicated the adenoids were removed (22 patients)

using first adenoid curette with guard followed by curette without guard. All the patients received the same postoperative therapy i.e. 8-hourly Augmentin (amoxicillin/ clavulanic acid) 25 mg/kg orally, paracetamol 15 mg/kg, pyodine mouth wash, and where required, intravenous Ringer Lactate was added.

Patients were monitored for post operative nausea, vomiting and the need for rescue anti-emetics during first 24 hours in the ward. Number of episodes of nausea and vomiting were recorded after every one hour during first 6 hours and then 4 hourly up to 24 hours. Any patient who had more than three episodes of vomiting, rescue anti-emetic in the form of inj metoclopramide 0.15mg/kg was given and recorded. Also intravenous rehydration was done with Ringers lactate solution when necessary. In resistant cases of vomiting, ondansetron 0.15mg/kg was administered intravenously over 15 minutes. Patients were discharged if they were free from morbidities like nausea, vomiting and dehydration after 24 hours.

Gender, age in years and age group were demographic while episodes of nausea, episodes of vomiting and frequency of need for anti-emetics were research variables. Age grouping was done as: 6-10, 11-20 and 21-30 years. The data was analyzed by SPSS 16 (SPSS Inc. Chicago, IL, USA). Descriptive statistics for nominal data were given as frequency and relative frequency and for numeric data like age in years as mean, SD and range. Comparative analysis of research variables was done by Chi-square test. P value of <0.05 was considered as statistically significant.

Table 1: Age grouping of patients undergoing tonsillectomy.

Age group	Group 1 (treatment)		Group 2 (control)		Total	
	Frequency	Relative frequency	Frequency	Relative frequency	Frequency	Relative frequency
06-10 years	15	30%	18	36%	33	33%
11-20 years	22	44%	24	48%	46	46%
21-30 years	13	26%	8	16%	21	21%
Total	50	100%	50	100%	100	100%

Table 2: Inferential statistics of nausea, vomiting and need for rescue anti-emetics in tonsillectomy patients.

Research variables	Group 1 (treatment)		Group 2 (control)		Chi-square test		
	Frequency	Relative frequency	Frequency	Relative frequency	Pearson Chi-square value	Degree of freedom	p-value
Nausea	3	6%	13	26%	7.440	1	0.006
Vomiting	2	4%	10	20%	6.061	1	0.014
Anti-emetics	1	2%	9	18%	7.111	1	0.008

RESULTS

A total of 100 patients with 50 patients in each group, were included in the study. Male were 37 (74%) and female 13 (26%) in Group 1 while male were 29 (58%) and female 21 (42%) in Group 2. In total male were 76 (76%) and female 34 (34%). The mean age was 15.74 ± 6.79 (6-30) years in Group 1 and 14.18 ± 6.22 (6-30) years in Group 2. In total the mean age was 14.96 ± 6.52 (6-30) years. Age grouping is shown in Table 1.

Inferential statistics for frequencies of post operative nausea, vomiting and need for anti-emetics are shown in Table 2. The difference was statistically significant for all the three research variables.

DISCUSSION

Post operative nausea and vomiting continues to be a common concern after tonsillectomy. It is a leading cause of dehydration and unanticipated hospital admissions in post tonsillectomy patients and increases the total health care cost. To minimize PONV and improve oral intake anesthesiologists have focused primarily on anaesthetic technique with minimal emetic potential.^{7,8} The exact mechanism for anti-emetic effect of dexamethasone is still unknown. Despite this, dexamethasone is commonly used as an adjuvant with emetogenic chemotherapy, and its anti-emetic effect is widely accepted.⁹

The age range of our patients was almost similar to a study by Buland K et al.¹⁰ Contrary to our results, in a double-blind, randomized, placebo controlled trial from Kingdom of Saudi Arabia, patients were aged years 18 or older⁹ while in the study by Alajmi MA et al, all of the patients were from pediatric age group.¹¹ Our study is consistent with other studies in showing male preponderance.^{12,13} Patients treated with dexamethasone in the present study reported decrease in frequency of PONV, the results being statistically significant ($p < 0.05$). Matching our results a statistically significant decrease in frequency of PONV was noted between the steroid and control groups after a single intra-operative dose of dexamethasone in tonsillectomy/ adenoidectomy patients.^{5,11,14-18}

Pappas et al showed decrease in frequency of PONV from 62% to 40% using 1 mg/kg dexamethasone for adenotonsillectomy.¹⁹ With the same dosage of dexamethasone, reduction in frequency of PONV from 72% to 40% was noted by splinter et al.²⁰ On the other hand no significant difference was found in the frequency of nausea and vomiting across groups receiving or not receiving dexamethasone in well-designed prospective studies.^{3,21}

In our study, majority of dexamethasone treated patients did not require rescue anti-emetics

in the first 24 hours of post operative period. This indicates prolonged anti-emetic effect of dexamethasone. These findings are also supported by other studies.^{11,22} However no significant difference was noted regarding the requirements for anti-emetics for the two groups in another study.³

Most anesthesiologists and otolaryngologists agree that routine prophylaxis for all surgical patients is not recommended.²³ In general, patients at small risk for PONV are unlikely to benefit from prophylaxis and would be put at unnecessary risk from the potential side effects of anti-emetics.²⁴

The present study is limited because of the small study groups. A large sized, prospective, randomized and a multi centre study is recommended to study the effects of steroids on PONV in the first 24 hours after tonsillectomy/ adenoidectomy.

CONCLUSION

Single dose of dexamethasone given intra-operatively reduces the frequency of post-operative nausea, vomiting and the need for rescue anti-emetics in the first 24 hours.

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CONFLICT OF INTEREST
Authors declare no conflict of interest.
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